In the Claims

Applicants submit below a complete listing of the current claims, with insertions indicated by underlining and deletions indicated by strikeouts and/or double bracketing.

Listing of the Claims

1. (Currently Amended) An electromagnetic transponder including a parallel oscillating circuit adapted to being excited by a series oscillating circuit of a read/write terminal when the electromagnetic transponder enters the field of the read/write terminal, wherein components of the parallel oscillating circuit of the transponder are sized based on a predetermined distance so that a coupling coefficient between respective oscillating circuits of the read/write terminal and of the electromagnetic transponder rapidly decreases when a distance separating the electromagnetic transponder from the read/write terminal becomes greater than the predetermined distance,

wherein an inductance of the parallel oscillating circuit is chosen in accordance with the following relation:

$$\text{kopt} = \sqrt{\frac{R1L2}{R2L1}},$$

where kopt is a coupling coefficient providing a maximum voltage across the parallel oscillating circuit, R1 is a series resistance of the series oscillating circuit, R2 is an equivalent resistance of the transponder parallel to an inductance L2 of the transponder, and L1 is an inductance of the series oscillating circuit.

2. (Previously Presented) The electromagnetic transponder of claim 1, wherein the predetermined distance corresponds to 1 centimeter.

3. (Previously Presented) The electromagnetic transponder of claim 1, wherein a capacitive element of the parallel oscillating circuit is provided by a stray capacitance of an inductance of the parallel oscillating circuit.

4. (Previously Presented) The electromagnetic transponder of claim 1, wherein inductance of the parallel oscillating circuit is maximized, a capacitance of this oscillating circuit being minimized.

5. (Cancelled).

6. (Currently Amended) The electromagnetic transponder of claim 1, wherein the components of the parallel oscillating circuit of the transponder are sized based on an operating point at a zero distance, chosen to correspond to a coupling coefficient smaller than an optimal coupling coefficient in accordance with the following relation:

$$V2max(kopt) = \sqrt{\frac{R2}{R1}\frac{Vg}{2}},$$

where V2max is a voltage across the parallel oscillating circuit for optimal coupling between the parallel and series oscillating circuits~~, R1 is a series resistance of the series oscillating circuit, R2 is an equivalent resistance of the transponder brought in parallel on its oscillating circuit,~~ and Vg is an excitation voltage of the series oscillating circuit.

7. (Previously Presented) The electromagnetic transponder of claim 1, wherein a number of turns of an inductance of the parallel oscillating circuit of the transponder is in a range of between 5 and 15.

8. (Previously Presented) The electromagnetic transponder of claim 1, wherein respective values of a capacitance and of an inductance of the parallel oscillating circuit range between 5 and 100 pf and between 2 and 25 μH.

9. (Currently Amended) A terminal for generating an electromagnetic field adapted to cooperate with at least one transponder when said <u>at least one</u> transponder enters the electromagnetic field, including a series oscillating circuit for generating the electromagnetic field, the series oscillating circuit being sized based on a predetermined distance so that a

coupling coefficient between the series oscillating circuit of the terminal and an oscillating circuit of the at least one transponder strongly decreases when a distance separating the at least one transponder from the terminal becomes greater than the predetermined distance,

wherein an inductance of the series oscillating circuit is chosen in accordance with the following relation:

$$\text{kopt} = \sqrt{\frac{R1L2}{R2L1}},$$

where kopt is a coupling coefficient providing a maximum voltage across the oscillating circuit of the at least one transponder, R1 is a series resistance of the series oscillating circuit, R2 is an equivalent resistance of the at least one transponder parallel to an inductance L2 of the at least one transponder, and L1 is an inductance of the series oscillating circuit.

10. (Previously Presented) The terminal of claim 9, wherein components of the series oscillating circuit are sized to fulfill operating conditions of the transponder of claim 1.

11. (Previously Presented) The terminal of claim 10, wherein an inductance of the series oscillating circuit includes a single turn.

12. (Original) A system of contactless electromagnetic transmission between a terminal and a transponder, wherein the transponder is that of claim 1.

13. (Original) A system of contactless electromagnetic transmission between a terminal and a transponder, wherein the terminal is that of claim 9.

14. (Currently Amended) A transponder comprising:

an oscillating circuit adapted to be excited by an external electromagnetic field when the transponder enters the electromagnetic field, the oscillating circuit including an inductance, and wherein a stray capacitance of the inductance acts as a capacitive element for the oscillating circuit,

wherein components of the oscillating circuit are sized based on a particular distance such that a coupling coefficient between the transponder and a read/write terminal that generates the electromagnetic field rapidly decreases when a distance separating the transponder from the read/write terminal becomes greater than the particular distance.

15. (Canceled)

16. (Currently Amended) The transponder of claim ~~15~~ 14, wherein the ~~predetermined value~~ particular distance corresponds to approximately 1 centimeter.

17. (Currently Amended) A system for data transfer comprising:

a terminal including a series oscillating circuit having a first inductive element and a first capacitive element; and

a transponder including a parallel oscillating circuit having a second inductive element and a second capacitive element;

wherein the first and second inductive elements and first and second capacitive elements are sized based on a ~~predetermined~~ particular distance such that a coupling coefficient between the series oscillating circuit and the parallel oscillating circuit decreases rapidly when a distance between the terminal and the transponder is greater than the ~~predetermined~~ particular distance.

18. (Previously Presented) The system for data transfer of claim 17, wherein the second capacitive element is provided by a stray capacitance of the second inductive element.

19. (Currently Amended) The system for data transfer of claim 17, wherein the ~~predetermined~~ particular distance is approximately 1 centimeter.

20. (Previously Presented) The system for data transfer of claim 17, wherein the first inductive element comprises a single turn.

21. (New) The system of claim 17, wherein the first inductive element and/or the second inductive element is chosen in accordance with the following relation:

$$kopt = \sqrt{\frac{R1L2}{R2L1}},$$

where kopt is a coupling coefficient providing a maximum voltage across the parallel oscillating circuit, R1 is a series resistance of the series oscillating circuit, R2 is an equivalent resistance of the transponder parallel to the second inductive element having an inductance L2, and L1 is an inductance of the first inductive element.

22. (New) The system of claim 17, wherein at least one of the following elements: the first and second inductive elements and first and second capacitive elements, are sized based on an operating point at a zero distance, chosen to correspond to a coupling coefficient smaller than an optimal coupling coefficient in accordance with the following relation:

$$V2max(kopt) = \sqrt{\frac{R2}{R1}}\frac{Vg}{2},$$

where V2max is a voltage across the parallel oscillating circuit for optimal coupling between the parallel and series oscillating circuits, R1 is a series resistance of the series oscillating circuit, R2 is an equivalent resistance of the transponder parallel to the parallel oscillating circuit, and Vg is an excitation voltage of the series oscillating circuit.

23. (New) An electromagnetic transponder including a parallel oscillating circuit adapted to being excited by a series oscillating circuit of a read/write terminal when the electromagnetic transponder enters the field of the read/write terminal, wherein one or more components of the parallel oscillating circuit of the transponder are sized based on a particular distance so that a coupling coefficient between respective oscillating circuits of the read/write terminal and of the electromagnetic transponder rapidly decreases when a distance separating the electromagnetic transponder from the read/write terminal becomes greater than the particular distance,

wherein the components of the parallel oscillating circuit of the transponder are sized based on an operating point at a zero distance, chosen to correspond to a coupling coefficient smaller than an optimal coupling coefficient in accordance with the following relation:

$$V2max(kopt) = \sqrt{\frac{R2}{R1}}\frac{Vg}{2},$$

where V2max is a voltage across the parallel oscillating circuit for optimal coupling between the parallel and series oscillating circuits, R1 is a series resistance of the series oscillating circuit, R2 is an equivalent resistance of the transponder parallel to the parallel oscillating circuit, and Vg is an excitation voltage of the series oscillating circuit.

24. (New) The electromagnetic transponder of claim 23, wherein the particular distance corresponds to 1 centimeter.

25. (New) The electromagnetic transponder of claim 23, wherein a capacitive element of the parallel oscillating circuit is provided by a stray capacitance of an inductance of the parallel oscillating circuit.

26. (New) The electromagnetic transponder of claim 23, wherein inductance of the parallel oscillating circuit is maximized, a capacitance of this oscillating circuit being minimized.

27. (New) The electromagnetic transponder of claim 23, wherein a number of turns of an inductance of the parallel oscillating circuit of the transponder is in a range of between 5 and 15.

28. (New) The electromagnetic transponder of claim 23, wherein respective values of a capacitance and of an inductance of the parallel oscillating circuit range between 5 and 100 pf and between 2 and 25 μH.

29. (New) The terminal of claim 9, wherein one or more components of the series oscillating circuit of the transponder are sized based on an operating point at a zero distance, chosen to correspond to a coupling coefficient smaller than an optimal coupling coefficient in accordance with the following relation:

$$V2max(kopt) = \sqrt{\frac{R2}{R1}\frac{Vg}{2}},$$

where V2max is a voltage across the oscillating circuit of the at least one transponder for optimal coupling between the series oscillating circuit and the oscillating circuit of the at least one transponder and Vg is an excitation voltage of the series oscillating circuit.

30. (New) A terminal for generating an electromagnetic field adapted to cooperate with at least one transponder when said transponder enters the electromagnetic field, including a series oscillating circuit for generating the electromagnetic field, one or more components of the series oscillating circuit being sized based on a particular distance so that a coupling coefficient between the series oscillating circuit and an oscillating circuit of the at least one transponder strongly decreases when a distance separating the at least one transponder from the terminal becomes greater than the particular distance,

wherein one or more components of the series oscillating circuit of the transponder are sized based on an operating point at a zero distance, chosen to correspond to a coupling coefficient smaller than an optimal coupling coefficient in accordance with the following relation:

$$V2max(kopt) = \sqrt{\frac{R2}{R1}\frac{Vg}{2}},$$

where V2max is a voltage across the oscillating circuit of the at least one transponder for optimal coupling between the and series oscillating circuits, R1 is a series resistance of the series oscillating circuit, R2 is an equivalent resistance of the transponder parallel to the oscillating circuit of the at least one transponder, and Vg is an excitation voltage of the series oscillating circuit.

31. (New) The terminal of claim 30, wherein components of the series oscillating circuit are sized to fulfill operating conditions of the transponder of claim 1.

32. (New) The terminal of claim 31, wherein an inductance of the series oscillating circuit includes a single turn.

33. (New) The transponder of claim 14, wherein the inductance of the oscillating circuit is chosen in accordance with the following relation:

$$kopt = \sqrt{\frac{R1L2}{R2L1}},$$

where kopt is a coupling coefficient providing a maximum voltage across the oscillating circuit, R1 is a series resistance of an oscillating circuit of the read/write terminal, R2 is an equivalent resistance of the transponder parallel to an inductance L2 of the oscillating circuit, and L1 is an inductance of an oscillating circuit of the read/write terminal.

34. (New) The transponder of claim 14, wherein the components of the oscillating circuit are sized based on an operating point at a zero distance, chosen to correspond to a coupling coefficient smaller than an optimal coupling coefficient in accordance with the following relation:

$$V2max(kopt) = \sqrt{\frac{R2}{R1}}\frac{Vg}{2},$$

where V2max is a voltage across the oscillating circuit for optimal coupling between the oscillating circuit and an oscillating circuit of the read/write terminal, R1 is a series resistance of the oscillating circuit of the read/write terminal, R2 is an equivalent resistance of the transponder parallel to the oscillating circuit of the transponder, and Vg is an excitation voltage of the oscillating circuit of the read/write terminal.